Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A method of block diagram modeling in a data processing system, comprising:

in a first block, performing an index search operation by receiving a first value indicative of an index into a look-up table and generating information indicative of the location of the first value relative to a predefined domain of possible indexed values that define regions;

in a second block, receiving the information generated by the first block; and

using the information received in the second block to determine an output value used with a graphical block in a graphical model, a processing engine operating with the graphical model, a compiler, a simulator, a model constructor/editor, a code generator, a display, or a device ~~in a first lookup table~~.

2. (previously presented) The method of claim 1, wherein the generated information comprises information identifying a region of the predefined domain within which the first value falls.

3. (currently amended) The method of claim 2, wherein the generated information further comprises information identifying a position of the first value within the identified region ~~segment~~.

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4. (currently amended) The method of claim 1, <u>wherein the output value is related to a first lookup table and wherein the method further comprises</u> ~~further comprising~~:

in a third block different from the second block, receiving the information generated by the first block; and

using the information received in the third block to determine an output value of a second lookup table different from the first lookup table.

5. (previously presented) The method of claim 1, further comprising:

in a fourth block, receiving a second value indicative of an index into a lookup table;

in the fourth block, generating information indicative of the location of the second value relative to a predefined domain of possible index values;

in the second block, receiving the information generated by the fourth block; and

using the information received in the second block from the first block and the fourth block to determine an output value of the first lookup table.

6. (currently amended) The method of claim 5, wherein the first and fourth blocks are two of N index search blocks used to perform an N-dimensional interpolation, further comprising:

in each of the N index search blocks, receiving a value indicative of an index into the lookup table and corresponding to a different one of N dimensions;

in each of the N index search blocks, generating information indicative of the location of such value relative to the predefined domain of possible index values;[[and]]

in the second block, receiving the information generated by each of the N

index search blocks; and

using the information received in the second block to determine an output

value of the first lookup table.

7. (previously presented) The method of claim 1, wherein determining an output value

of the first lookup table comprises using the information received in the second block

to interpolate values in a lookup table.

8. (previously presented) The method of claim 1, comprising:

maintaining in a block library a pre-lookup index search block and an

interpolation block that uses output of the pre-lookup index search block for

interpolated table lookup; and

instantiating the index search block to create the first block and instantiation

the interpolation block to create the second block.

9. (previously presented) The method of claim 8, further comprising:

receiving parameters from a user to instantiate the pre-lookup index search

block and the interpolation block.

10. (previously presented) The method of claim 9, wherein receiving comprises

providing the user with a dialog box having fields for specifying values of the

parameters for the pre-lookup index search block.

11. (previously presented) The method of claim 9, wherein receiving comprises

providing the user with a textual API for programmatically specifying values of the

parameters.

12. (previously presented) The method of claim 9, wherein the parameters for the pre-

lookup index search block comprise breakpoint data.

13. (previously presented) The method of claim 9, wherein receiving comprises

providing the user with a dialog box having fields for specifying values of the

parameters for the interpolation block.

14. (previously presented) The method of claim 13, wherein the parameters for the

interpolation block comprise table data.

15. (previously presented) The method of claim 6, wherein the generated information

comprises a breakpoint data set index value and a distance fraction value for each

dimension and corresponding input value chosen by the user.

16. (previously presented) The method of claim 1, comprising:

using the graphical block diagram of the graphical block diagram model as a

specification for interpretation by automatic code generation software what generates

code to perform computations equivalent to computations performed by the graphical

block diagram model.

17. (previously presented) In one or more electronic devices, a method of graphical block diagram processing, comprising:

receiving as an input a block diagram model that includes interpolation lookup blocks which each perform interpolated table lookup, the interpolation lookup blocks are connected to at least one index search block which performs index search operations, the index search block providing an input value and breakpoint data set to any connected interpolation lookup block;

detecting if the interpolation lookup blocks have shared input values and breakpoint data sets; and

interpreting the block diagram model as if the block diagram model included separate index search blocks for each of the interpolated lookup blocks.

18. (previously presented) The method of claim 17, further comprising using the interpreted graphical block diagram by automatic code generation software that generates code to perform computations equivalent to computations performed by the graphical block diagram model.

19. (previously presented) In one or more electronic devices, a method of graphical block diagram processing, comprising:

maintaining in a block library an interpolation block that uses output of one or more pre-lookup index search blocks; and

enabling a user to use the pre-lookup index search and interpolation blocks to build a graphical block diagram model.

20. (previously presented) A computer program product residing on a computer-readable medium for block diagram modeling, the computer program product comprising instructions causing a computer to:

in a first block, perform an index search operation by receiving a first value indicative of an index integer index and a fraction into a lookup table and generating information indicative of the location of the first value relative to a predefined domain of possible indexed values;

in a second block, receive the information generated by the first block; and

use the information received in the second block to determine an output value of a first lookup table.

21. (previously presented) A computer system comprising:

in a first block, means for performing an index search operation by receiving a first value indicative of an index into a lookup table and generating information indicative of the location of the first value relative to a predefined domain of possible indexed values;

in a second block, means for receiving the information generated by the first block; and

means for using the information received in the second block to determine an output value of a first lookup table.

22. (new)   A method for block diagram based modeling, the method comprising:

receiving an input value using a pre-lookup search block;

accessing a breakpoint data array based on the input value, the breakpoint data array comprising a plurality of regions;

determining whether the input value corresponds to a value in one of the plurality of regions;

generating an index integer or a distance value when the input value corresponds to the value, the index integer or the distance value uniquely identifying the value based on the input value; and

sending the index integer or the distance value to an interpolation block to perform interpolation, the interpolation block further producing an output value.

23. (new)   A method for block diagram based modeling, the method comprising:

receiving a first input value via a first one of a plurality of pre-lookup search blocks;

receiving a second input value via a second one of the plurality of pre-lookup search blocks;

accessing a first set of breakpoints related to a first dimension via the first one of the plurality of pre-lookup search blocks, the first dimension related to the first input value;

accessing a second set of breakpoints related to a second dimension via the second one of the plurality of pre-lookup search blocks, the second dimension related to the second input value;

generating a first index value or a first distance value based on the first input value and generating a second index value or a second distance value based on the second input value;

performing a first interpolation based on the first index value or the

first distance value or based on the second index value or the second distance value

using a first interpolation block;

performing a second interpolation based on the first index value or the

first distance value or based on the second index value or the second distance value

using a second interpolation block; and

generating a first output value or a second output value based on the

performing the first interpolation or the second interpolation, respectively, the first

output value or the second output value compatible with one or more downstream

blocks operating with a block diagram modeling application, downstream

applications, or downstream devices.

24. (new)   A device, comprising:

first logic to:

receive an input signal related to a simulation,

access a data structure comprising a plurality of breakpoint

values,

determine an interval in which the input signal lies,

determine a distance into the interval using the input signal,

identify a distance value of the input signal into the interval

using an index value, and

generate an output comprising the index value or the distance

value; and

second logic to:

receive the output from the first logic,

perform an interpolation calculation using the output and a

table to produce an interpolated output value, and

send the interpolated output value to a destination related to the

simulation or a code generation application.

25. (new) A method for modeling, comprising:

receiving an input signal using a pre-lookup search block;

generating an index integer or a distance value when information in the input

signal corresponds to a value related to one of a plurality of regions in a breakpoint

data array;

sending the index integer or the distance value to a first one of a plurality of

interpolation blocks, the first one of the plurality of interpolation blocks producing a

first output value for use by a first receiving block; and

sending the index integer or the distance value to a second one of the plurality

of interpolation blocks, the second one of the plurality of interpolation blocks

producing a second output value for use by the first receiving block or another

receiving block.

26. (new) A modeling method, comprising:

generating a first index integer or a first distance value to identify first

information related to one of a plurality of regions of a first breakpoint array in a first

pre-lookup search block;

generating a second index integer or a second distance value to identify second

information related to one of a plurality of regions of a second breakpoint array in a

second pre-lookup search block;

sending the first index integer, the first distance value, the second index

integer or the second distance value to a first interpolation block that produces a first

output based on an interpolation operation related to the first index integer, the first

distance value, the second index integer or the second distance value, the first output

adapted for use with a first receiving block; and

sending the first index integer, the first distance value, the second index

integer or the second distance value to a second interpolation block that produces a

second output based on an interpolation operation related to the first index integer, the

first distance value, the second index integer or the second distance value, the second

output adapted for use with the first receiving block or for use with a second receiving

block.

27. (new) A method, comprising:

performing a pre-lookup index search operation in a first block by receiving a

first value indicative of an integer index or a fraction into a look-up table and

generating information indicative of the location of the first value relative to a

predefined domain of possible indexed values that define regions;

receiving the information generated by the first block via a second block that

performs interpolation based on the generated information; and

determining an output value on behalf of a lookup table using the generated

information received in the second block.

28. (new) A method, comprising:

maintaining an interpolation block in a block diagram model, the interpolation

block using one or more outputs of one or more pre-lookup index search blocks;

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receiving a user input; and

building a graphical block diagram model in response to the user input, the building using the one or more pre-lookup index search blocks, the interpolation block, information related to the one or more pre-lookup index search blocks, or the interpolation block.

29. (new) A computer program product residing on a computer-readable medium, the computer program product comprising instructions causing a computer to:

perform a pre-lookup index search operation in a first block by receiving a first value indicative of an integer index or a fraction into a lookup table and generating information indicative of a location of the first value relative to a predefined domain of possible indexed values; and

receive the generated information via a second block, the second block determining an output value on behalf of a first lookup table based on the generated information.

30. (new) A computer system comprising:

means for performing a pre-lookup index search operation in a first block by receiving a first value indicative of an integer index or a fraction into a lookup table and generating information indicative of a location of the first value relative to a predefined domain of possible indexed values; and

means for receiving the generated information using a second block, the second block using the generated information to determine an output value on behalf of a first lookup table.